



**What Is Claimed Is:**

1. Method for controlling induction sound of an internal combustion engine, comprising:

- (a) determining a first sound pressure during a run up of said engine, wherein said first sound pressure is based on each order of sound generated by said engine;
- (b) operating said engine under a plurality of operating conditions;
- (c) determining a second sound pressure for each of said operating conditions;
- (e) obtaining current vehicle operating conditions;
- (f) decomposing said first and second sound pressures and said frequency response into engine orders; and
- (g) generating a net control signal based on each of said first and second sound pressures and said vehicle operating conditions to control said sound wherein each individual order is controlled independently.

2. The method according to claim 1 further including determining a frequency response of a microphone and a speaker used in computing said first and second sound pressures.

3. The method according to claim 1 wherein said vehicle operating conditions are obtained by a transceiver from a vehicle databus.

4. The method according to claim 1 further including applying a gain factor for

attenuating said sound.

5. The method according to claim 1 further including applying a gain factor for enhancing said sound.

6. The method according to claim 1 wherein said determining a second pressure level includes computing a correction factor for each of said operating conditions.

7. The method according to claim 1 wherein said net control signal drives a speaker for providing audio output for controlling said sound.

8. The method according to claim 7, wherein said net control signal is amplified prior to driving said speaker.

9. The method according to claim 1 wherein said decomposing said first and second sound pressures and said frequency response into engine orders includes generation of look-up tables.

10. The method according to claim 9 further including a microcontroller for storing said look-up tables.

11. The method according to claim 1 further including an algorithm that utilizes a Nyquist criterion.

12. The method according to claim 1 further including a time delay between said engine operating conditions.

13. Method for controlling induction sound of an internal combustion engine, comprising:

(a) computing a first sound pressure during a run up of said engine, wherein said first sound pressure is based on each order of sound generated by said engine;

(b) operating said engine under a plurality of operating conditions;

(c) computing a second sound pressure for each of said operating conditions;

(d) computing a frequency response of a microphone and a speaker used in computing said first and second sound pressures;

(e) obtaining current vehicle operating conditions;

(f) decomposing said first and second sound pressures and said frequency response into engine orders; and

(g) generating a net control signal in real time based on each of said first and second sound pressures, said frequency response and said vehicle operating conditions to independently control individual orders of said sound.

14. The method according to claim 1 wherein said vehicle operating conditions are obtained by a transceiver from a vehicle databus.

15. The method according to claim 13 further including applying a gain factor for

attenuating said sound.

16. The method according to claim 13 further including applying a gain factor for enhancing said sound.

17. The method according to claim 13 wherein said determining a second pressure level includes computing a correction factor for each of said operating conditions.

18. The method according to claim 13 wherein said net control signal drives a speaker for providing audio output for controlling said sound.

19. The method according to claim 13, wherein said net control signal is amplified prior to driving said speaker.

20. A method for controlling induction sound of an internal combustion engine, comprising:

providing first look up tables based on a determination of a first sound pressure during a run up of said engine, wherein said first sound pressure is based on each order of sound generated by said engine;

providing second look up tables based on a determination of a second sound pressure, wherein said second sound pressure is computed for each of a plurality of operating conditions of said engine; and

obtaining current vehicle operating conditions; and  
generating a net control signal based on said first and second sound pressures,  
wherein each individual order is controlled independently.